STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR RESOURCES

MAJOR SOURCE PERMIT

DOMINION ENERGY
MANCHESTER STREET, INC.

RI-PSD-4

Pursuant to the provisions of Air Pollution Control Regulation No. 9, this major source permit is issued to:

Dominion Energy Manchester Street, Inc.

For the following:

A permit modification to allow the burning of No. 2 fuel oil on a discretionary basis in each of the three combustion turbines.

Located at: *40 Point Street, Providence*

This permit shall be effective from the date of its issuance and shall remain in effect until revoked by or surrendered to the Department. This permit does not *Dominion Energy Manchester Street, Inc.* **from compliance with applicable state and federal air pollution control rules and regulations. The design, construction and operation of this equipment shall be subject to the attached permit conditions and emission limitations.**

Stephen Majkut, Chief **Date**
Office of Air Resources

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
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Permit Conditions and Emissions Limitations

DOMINION ENERGY
MANCHESTER STREET, INC.

RI-PSD-4
(revised May 2006)

A. Emission Limitations

1. Natural Gas Firing

a. Nitrogen oxides (as nitrogen dioxide (NO_2)

(1) The concentration of nitrogen oxides discharged to the atmosphere from each stack shall not exceed 9 ppmv, on a dry basis, corrected to 15 percent O_2 (1 hour average).

(2) The emission rate of nitrogen oxides discharged to the atmosphere from each stack shall not exceed 47.5 lbs/hr.

b. Carbon Monoxide (CO)

(1) The concentration of carbon monoxide discharged to the atmosphere from each stack shall not exceed 11 ppmv, on a dry basis, corrected to 15 percent O_2 (1 hour average).

(2) The emission rate of carbon monoxide discharged to the atmosphere from each stack shall not exceed 29.5 lbs/hr.

c. Sulfur Dioxide (SO_2)

(1) The concentration of sulfur in the natural gas consumed in any fuel burning equipment at this facility shall not exceed 20 grains per 100 standard cubic foot (scf).

(2) The emission rate of sulfur dioxide discharged to the atmosphere from each stack shall not exceed 73.13 lbs/hr.

d. Particulate Matter

(1) The emission rate of particulate matter discharged to the atmosphere from each stack shall not exceed 0.005 lbs per million BTU heat input (HHV) or a maximum of 6.53 lbs/hr, whichever is more stringent.

e. Total Nonmethane Hydrocarbons (NMHC)

(1) The concentration of total nonmethane hydrocarbons discharged to the atmosphere from each stack shall not exceed 5.0 ppmv, on a dry basis, corrected to 15 percent O_2 (1 hour average).

(2) The emission rate of total nonmethane hydrocarbons discharged to the atmosphere from each stack shall not exceed 7.0 lbs/hr.

f. Ammonia (NH_3)

(1) The concentration of ammonia discharged to the atmosphere from each stack shall not exceed 10 ppmv, on a dry basis, corrected to 15 percent O_2 (1 hour average).

(2) The emission rate of ammonia discharged to the atmosphere from each stack shall not exceed 18.0 lbs/hr.

2. Fuel Oil Firing

a. Nitrogen Oxides (as nitrogen dioxide (NO_2)

(1) The concentration of nitrogen oxides discharged to the atmosphere from each stack flue shall not exceed ~~25~~15 ppmv, on a dry basis, corrected to 15 percent O_2 (1 hour average).

(2) The emission rate of nitrogen oxides discharged to the atmosphere from each stack shall not exceed ~~131.3~~78.78 lbs/hr.

(3) The total quantity of nitrogen oxides discharged to the atmosphere from the three combustion turbines combined, during discretionary oil firing, shall not exceed 4000 lbs per calendar month based upon a 12-month rolling average.

b. Carbon Monoxide (CO)

(1) The concentration of carbon monoxide discharged to the atmosphere form each stack shall not exceed 12 ppmv, on a dry basis, corrected to 15 percent O_2 (1 hour average)

(2) The emission rate of carbon monoxide discharged to the atmosphere from each stack shall not exceed 39.1 lbs/hr.

c. Sulfur Dioxide (SO_2)

(1) All fuel oil burned in any turbine ~~or duct burner~~ shall contain no more than 0.~~30~~05 percent sulfur by weight.

(2) The emission rate of sulfur dioxide discharged to the atmosphere from each stack shall not exceed ~~383.0~~63.8 lbs/hr.

(3) The total quantity of sulfur dioxide discharged to the atmosphere from the three combustion turbines combined, during discretionary oil burning, shall not exceed 3211.2 lbs/day.

d. Particulate Matter

(1) The emission rate of particulate matter discharged to the atmosphere from each stack shall not exceed 0.01 lbs per million BTU heat input (HHV) or a maximum of 11.9 lbs/hr whichever is more stringent.

e. Total Nonmethane Hydrocarbons (NMHC)

(1) The concentration of total nonmethane hydrocarbons discharged to the atmosphere from each stack shall not exceed 5.0 ppmv, on a dry basis, corrected to 15 percent O_2 (1 hour average).

(2) The emission rate of total nonmethane hydrocarbons discharged to the atmosphere from each stack shall not exceed 6.8 lbs/hr.

f. Ammonia (NH_3)

(1) The concentration of ammonia discharged to the atmosphere from each stack shall not exceed 10 ppmv, on a dry basis, corrected to 15 percent O_2 (1 hour average).

(2) The emission rate of ammonia discharged to the atmosphere from each stack shall not exceed 18.0 lbs/hr.

B. Emission Limitations - Auxiliary Boiler (see Approval No. 1391)

C. Operating Requirements

1. Oil use, for the combustion turbines~~, duct burners, and auxiliary boiler,~~ shall be limited to that needed to maintain oil system readiness and times when natural gas is unavailable, and during other times on a discretionary basis as limited by this permit. This limitation on discretionary oil burning shall not apply to oil burned when natural gas is unavailable or when operating to maintain oil system readiness. Maintenance of oil system readiness is limited to burning oil for the purposes of ensuring adequate fuel flow, monitoring and adjusting operating parameters, and testing emissions.

   Natural gas shall be deemed unavailable in cases of interruption in supply or transportation resulting from equipment failure, regulatory actions, or interruption of supply outside the control of the owner/operator.

   Natural gas shall be deemed unavailable if:

   a. ISO-New England has declared a "Cold Weather Event" pursuant to ~~NEPOOL Operating Procedure No. 20~~Market Rule 1, Appendix H, "Operations During Cold Weather Conditions". The permittee may utilize fuel oil for each Operating Day (12 AM-12 PM) that this condition exists; or,

   b. ISO-New England has declared a "Cold Weather Watch or a "Cold Weather Warning" pursuant to ~~NEPOOL Operating Procedure No. 20~~ Market Rule 1, Appendix H, "Operations During Cold Weather Conditions" and either ISO-New England has forecast ~~NEPOOL~~ISO New England Operating Procedure No. 4 conditions in its Morning Report or as revised/updated during the Operating Day, or has taken any action under ~~NEPOOL~~ISO New England Operating Procedure No. 4. The permittee may utilize fuel oil for the 24-hour period between issuance of the Morning Reports (9 AM Day 1 to 9 AM Day 2) that this condition exists;

   Natural gas shall not be deemed unavailable on the basis of any increase in the cost of supply or transportation or allocation of available natural gas to other facilities within the control of the owner/operator.

   If natural gas is unavailable, the owner/operator may utilize fuel oil, with a sulfur content of ~~0.3~~0.05 percent or less by weight, as a replacement fuel~~ for not more than thirty (30) consecutive days, and not more than sixty (60) days over the course of a calendar year. However, such durational limits may be extended by the Office of Air~~

~~Resources on a case by case basis upon written request and demonstration of the continued unavailability of natural gas~~.

2. Visible emissions from any stack at this facility shall not exceed 10% opacity (six-minute average).

3. The owner/operator shall limit the combined quantity of fuel oil combusted during discretionary oil burning to 6,615,000 gallons or less for any consecutive 12-month period.

D. Continuous Monitors

1. Continuous emission monitoring equipment shall be installed, operated and maintained in the exhaust stream of each combustion turbine for opacity, nitrogen oxides, carbon monoxide, sulfur dioxide and oxygen.

2. The continuous emission monitors for the combustion turbines, for sulfur dioxide, nitrogen oxides and carbon dioxide, must satisfy EPA performance specifications and quality assurance procedures in 40 CFR 75, Appendices A, B and F. The continuous emission monitors for the combustion turbines, for carbon monoxide and opacity, must satisfy EPA performance specifications and quality assurance procedures in 40 CFR 60, Appendix B and Appendix F, respectively. The continuous emission monitors for the combustion turbines, for ammonia, must satisfy the performance specifications and quality assurance procedures in the facility's Quality Assurance/Quality Control Plan for Continuous Emission Monitors.

3. Performance specifications, monitor location, calibration and operating procedures and quality assurance procedures for each monitor must be submitted to the Office of Air Resources for review and approval at least 180 days prior to expected start-up.

4. All data shall be monitored and recorded continuously for each unit when it is being fired. Continuous emission monitoring data may be used as evidence in determining the owner/operator's compliance/non compliance with the conditions and emission limitations contained in Sections A,D,F,G and H of this permit.

5. Natural gas and fuel oil flows to each turbine ~~and the duct burners~~ shall be continuously measured and recorded.

6. A method for monitoring and recording ammonia concentrations in the turbine flue gases shall be proposed for the Office of Air Resources review and at least 180 days prior to expected start-up. The owner/operator shall monitor and record ammonia concentrations using the approved method.

7. Catalyst bed temperature shall be continuously measured and recorded.

8. The facility shall have the capability of transmitting all of the collected continuous monitoring data to the Office of Air Resources office via a telemetry system. The owner/operator must provide all of the necessary funds for installation and operation of this equipment, excluding any personnel costs. A plan for accomplishing this must be submitted to the Office of Air Resources for review and approval prior to installation of the equipment or at least 180 days prior to expected start-up, whichever is earlier. This plan shall also define procedures to test and protect the integrity of transmitted data.

9. The owner/operator shall certify, operate and maintain, in accordance with all the requirements of 40 CFR Part 75, a SO_2 continuous emission monitoring system and a flow monitoring system with the automated data acquisition and handling system for measuring and recording SO_2 concentration (in ppm), volumetric gas flow (in scfh) and SO_2 mass emissions (in lb/hr and lb/day) discharged to the atmosphere.

10. The nitrogen oxides emissions measurements recorded and reported in accordance with subsection 41.10 of Air Pollution Control Regulation No. 41 shall be used to determine compliance with the nitrogen oxides emission limitation in conditions A.2.a.1-3.

11. The sulfur dioxide emissions measurements recorded and reported in accordance with 40 CFR Part 75 shall be used to determine compliance with the sulfur dioxide emission limitations in conditions A.2.c.2-3.

E. Stack testing

1. Within 60 days of achieving the maximum or normal operating rate, but no later than 180 days of initial start-up, initial performance testing shall be conducted for each turbine. Performance testing shall be conducted for nitrogen oxides, carbon monoxide, particulate matter (total and PM-10), non methane hydrocarbons, sulfur dioxide, and ammonia.

2. A stack testing protocol shall be submitted to the Office of Air Resources for review and approval prior to the performance of any stack tests. The owner/operator shall provide the Office of Air Resources at least 60 days prior notice of any performance test.

3. All test procedures used for stack testing shall be approved by the Office of Air Resources prior to the performance of any stack tests.

4. The owner/operator shall install any and all test ports or platforms necessary to conduct the required stack testing, provide safe access to any platforms and provide the necessary utilities for sampling and testing equipment.

5. Initial performance testing shall be conducted when burning natural gas and when burning fuel oil. All testing shall be conducted under operating conditions deemed acceptable and representative for the purpose of assessing compliance with the applicable emission limitation.

6. A final report of the results of stack testing shall be submitted to the Division no later than 45 days following completion of the testing.

7. All stack testing must be observed by the Office of Air Resources or its authorized representatives to be considered acceptable.

F. Record Keeping and Reporting

1. The owner/operator shall maintain a record of all measurements, performance evaluations, calibration checks, and maintenance or adjustments for each continuous monitor.

2. The owner/operator shall, on a monthly basis, no later than five (5) business days after the first of the month, determine the total quantity of nitrogen oxides discharged to the atmosphere from the three combustion turbines combined, during discretionary oil burning, for the previous month. The owner/operator shall keep records of this determination and provide such records to the Office of Air Resources upon request.

3. The owner/operator shall, on a daily basis, determine the total quantity of sulfur dioxide discharged to the atmosphere from the three combustion turbines combined, during discretionary oil burning. The owner/operator shall keep records of this determination and provide such records to the Office of Air Resources upon request.

4. The owner/operator shall, on a monthly basis, no later than five (5) business days after the first of the month, determine the total quantity of fuel oil combusted during discretionary oil burning for the previous month. The owner/operator shall keep records of this determination and provide such records to the Office of Air Resources upon request.

5. The owner/operator shall notify the Office of Air Resources in writing, after an exceedance of any emission limitation is discovered. This notification shall be made within five (5) business days of the exceedance. Notification shall be provided on forms furnished by the Office of Air Resources and must provide all of the information requested on the form.

6. The owner/operator shall notify the Office of Air Resources, in writing, after the discovery that a continuous emission monitor has malfunctioned. This notification shall be made within five (5) business days of when the continuous emission monitor malfunctioned. Notification shall be provided on forms furnished by the Office of Air Resources and must provide all of the information requested on the form.

7. The owner/operator shall notify the Office of Air Resources, in writing, whenever the combined quantity of fuel oil combusted during discretionary oil burning exceeds 6,615,000 gallons for any consecutive 12-month period.

8. The owner/operator shall notify the Office of Air Resources of any anticipated noncompliance with the terms of this permit or any other applicable air pollution control rules or regulations.

9. The owner/operator shall maintain the following records for each turbine:

- The hours of operation, including any start up, shut down or malfunction in the operations of the facility.
- The date, start time, end time and amount of fuel used for any period when fuel oil is burned. Records must indicate whether fuel oil was burned under discretionary oil burning, during the unavailability of natural gas or to maintain oil system readiness.
- Any malfunction of the air pollution control system.

10. The owner/operator shall notify the Office of Air Resources of the anticipated date of the initial start-up not more than 60 days nor less than 30 days prior to such date.

11. The owner/operator shall notify the Office of Air Resources in writing of the date construction of the facility commenced no later than 30 days after such date.

12. The owner/operator shall notify the Office of Air Resources in writing of the date of actual initial start-up no later than fifteen days after such date.

13. The owner/operator shall notify the Office of Air Resources in writing of any physical or operational change to the facility which may increase the emission rate of any air pollutant. Such notification shall include:

- Information describing the nature of the change.
- Information describing any planned changes to the air pollution control system.
- Information describing the effect of the change on the throughput capacity of the facility.
- The expected completion date of the change.

Any such a change shall be consistent with the appropriate regulations and have the prior approval of the Director.

14. The owner/operator shall notify the Office of Air Resources in writing of the date upon which initial performance testing of the continuous emission monitors commences at least 30 days prior to such date.

15. The owner/operator shall notify the Office of Air Resources within 24 hours after oil burning is started due to the unavailability of natural gas. The owner /operator shall notify the Office of Air Resources in writing, no later than 5 days after fuel oil burning is started due to the unavailability of natural gas. Such notification shall include:

- The date and time fuel oil burning was commenced
- The reasons for the unavailability of natural gas
- The anticipated length of time natural gas will be unavailable

16. The owner/operator shall submit a written report of excess emissions as measured by a continuous emission monitor for every calendar quarter. All quarterly reports shall be received no later than 30 days following the end of each calendar quarter and shall include the following information:

- The date and time of commencement and completion of each period of excess emissions and the magnitude of the excess emissions.
- Identification of the suspected reason for the excess emissions and any corrective action taken.
- The date and time period any continuous emission monitor was inoperative, except for zero and span checks and the nature of system repairs or adjustments.

In the event none of the above items have occurred, such information shall be stated in the report.

17. All records required in this permit shall be maintained for a minimum of three years after the date of each record and shall be made available to representatives of the Office of Air Resources upon request.

18. Deviations from permit conditions shall be reported to the Office of Air Resources, in writing, within five (5) business days of the deviation. Reports shall describe the probable cause of such deviations and any corrective actions or preventative measures taken.

G. Other Permit Conditions

1. There shall be no by passing of the air pollution control equipment during start-up, operation or shutdown. Ammonia will not be injected during startup or shutdown unless the catalyst bed in the SCR system is at, or above, the manufacturer's specified minimum operating temperature.

2. An operation and maintenance plan for the facility must be submitted to the Division at least 180 days prior to start-up of the facility.

3. To the extent consistent with the requirements of this PSD permit and applicable federal and state laws, the facility shall be designed, constructed and operated in accordance with the representation of the facility in the PSD permit application.

4. The owner/operator shall shut down any emission unit in the event of a malfunction of the unit's air pollution control equipment that results in, or that could result in, emissions in excess of the permit limits. The unit shall remain shutdown until the malfunction has been identified and corrected.

5. Employees of the Office of Air Resources and its authorized representatives shall be allowed to enter the facility at all times for the purpose of inspecting any air pollution source, investigating any condition it believes may be causing air pollution or examining any records required to be maintained by the Office of Air Resources.

6. The owner/operator shall have each delivery of fuel oil analyzed for sulfur content and trace metals. If multiple deliveries are made from a common source, an analysis of the source may be used. Trace metals analysis shall include antimony, arsenic, barium, beryllium, cadmium, chromium (total and hexavalent), lead, mercury, nickel, and vanadium. The fuel oil must be sampled and analyzed according to the appropriate ASTM methods. Records of the fuel oil analyses shall be maintained by the owner/operator.

7. This facility is subject to the requirements of the Federal New Source Performance Standards 40 CFR 60, Subparts A (General Provisions), Dc (Small Industrial-Commercial-Institutional Steam Generating Units) and GG (Stationary Gas Turbines). Compliance with all applicable provisions of these regulations is required.

8. Construction access and circulation routes shall be provided a temporary crushed gravel or pavement surface.

9. All construction related travel routes, exposed or excavated areas, shall be watered down or otherwise treated as frequently as necessary to minimize dust.

10. Construction vehicles transporting loose aggregate shall be covered with a tarpaulin or similar dust resistant membrane.

11. Construction vehicle operating speeds shall be controlled to minimize generation of dust.

12. All construction related open storage areas and/or piles of soil, aggregates or any other dust producing material shall be covered or watered down as necessary to prevent generation of dust.

13. Any spillage from construction trucks or other construction equipment on any public street shall be removed promptly.

14. The natural gas fired in the turbines shall be analyzed daily for nitrogen and sulfur content as specified in 40 CFR 60.334 and 60.335 unless an alternative monitoring plan is approved by the Office of Air Resources and the USEPA Region I.

15. The applicant must file applications for approval to construct/install and receive approval prior to construction/installation of the following equipment:

    (i) the combustion turbine(s)
    (ii) the heat recovery steam generator(s)
    (iii) the SCR system(s)

    Each application must be submitted at least 120 days prior to the anticipated date of construction/installation.

16. Each of the existing boilers at the Manchester Street Station, Units 6, 7 and 12, shall be permanently removed from service prior to operation of the corresponding replacement combustion turbine. Once a boiler is permanently removed from service, it shall be dismantled or rendered inoperable. The total number of operating existing boilers and combustion turbines shall not be greater than three.

17. The SCR system shall be designed to limit the conversion of sulfur dioxide (SO_2) to sulfur trioxide (SO_3) to 1 percent or less.

H. Startup/Shutdown Conditions

1. Unit startup shall be defined as that period of time from initiation of combustion turbine firing until the unit reaches steady state operation. Steady state operation shall be reached when the combustion turbine has reached minimum load (70 Megawatts), the steam turbine is declared available for load changes and injection steam of proper quality is available from the steam turbine extraction system. This period shall not exceed 60 minutes for a hot start, 180 minutes for a warm start, nor 240 minutes for a cold start. A warm start shall be defined as startup when the

generating unit has been down for more than 2 hours and less than or equal to 48 hours. A cold start shall be defined as startup when the generating unit has been down for more than 48 hours. Unit shutdown shall be defined as that period of time from steady state operation to cessation of combustion turbine firing. This period shall not exceed 60 minutes.

2. The emission limitations of Conditions A.1, A.2, and C.2 shall not apply during turbine startup/shutdown conditions.

3. Hourly average emissions of nitrogen oxides, carbon monoxide and opacity shall not exceed the following limits during turbine startup/shutdown conditions:

   a. Nitrogen oxides (as nitrogen dioxide (NO_2)

      (1) The concentration of nitrogen oxides discharged to the atmosphere from each stack shall not exceed 135 ppmv, on a dry basis, corrected to 15 percent O_2.

      (2) The emission rate of nitrogen oxides discharged to the atmosphere from each stack shall not exceed 300 lbs/hr.

   b. Carbon Monoxide (CO)

      (1) The concentration of carbon monoxide discharged to the atmosphere from each stack shall not exceed 2000 ppmv, on a dry basis, corrected to 15 percent O_2.

      (2) The emission rate of carbon monoxide discharged to the atmosphere from each stack shall not exceed 1000 lbs/hr.

   c. Visible emissions from any stack shall not exceed 10% opacity.

   The average of the hourly emission rates for these emissions during each startup/shutdown period shall be used to determine compliance with this condition.